

AN EXPERIMENT WITH GELATINO-BROMIDE.

THE collodio-bromide processes have for some time held a considerable place in the pages of THE BRITISH JOURNAL OF PHOTOGRAPHY, and obtained such a prominent chance of being eventually the process of the day in the dry way, that a few remarks upon the application of another medium may perhaps not be uninteresting to the readers of the Journal, though little more can be stated than the result of somewhat careless experiments tried at first on an exceedingly dull afternoon. It is not for a moment supposed to be new, for the chances of novelty in photography are small, seeing the legion of ardent workers and the ground already trodden by its devotees, so that for outsiders little remains except to take the result of labours so industriously and largely circulated through these pages and be thankful.

Gelatine, which forms the medium of so many printing processes, and which doubtless is yet to form the base of more, was tried in the place of collodion in this manner:—Thirty grains of Nelson's gelatine were washed in cold water, then left to swell for several hours, when all the water was poured off and the gelatine set in a wide-mouthed bottle, with the addition of four drachms of pure water and two small drops of aqua regia, and then placed in a basin of hot water for solution. Eight grains of bromide of cadmium dissolved in half-a-drachm of pure water were now added, and the solution stirred gently. Fifteen grains of nitrate of silver were next dissolved in half-a-drachm of water in a test tube and the whole taken into the dark room, when the latter was added to the former slowly, stirring the mixture the whole time. This gave a fine milky emulsion, and was left for a little while to settle. A few plates of glass well cleaned were next levelled on a metal plate put over a small lamp; they were, when fully warmed, coated by the emulsion spread to the edges by a glass rod, then returned to their places and left to dry. When dry, the plates had a thin, opalescent appearance, and the deposit of bromide seemed to be very evenly spread in the substance of the substratum.

These plates were printed from in succession from different negatives, one of which had been taken years since on albumen with oxgall and diluted phosphoric acid, sensitised in an acid nitrate bath, and developed with pyrogalllic acid, furnishing a beautiful warm brown tint.

The exposure varied from the first plate thirty seconds to a minute and a-half, as the light was very poor. No vestige of an outline appeared on removal from the printing-frame. The plates were dipped in water to wet the surface, and over them was poured a plain solution of pyrogalllic acid, four grains to the ounce of water. Soon a faint but clean image was seen, which gradually intensified up to a certain point, then browned all over; hence the development in the others was stopped at an early stage, the plate washed and the development continued with fresh pyro., with one drop of a ten-grain solution of nitrate of silver, then re-washed and cleared by a solution of hyposulphite of soda.

The resulting prints were very delicate in detail, of a colour vary-

ing between a bistre and olive tint, and after washing dried with a brilliant surface. The colour of the print varied greatly, according to the exposure. From the colour and delicacy it struck me that with care to strain the gelatine or use only the clearest portion, such a process might be utilised for transparencies for the lantern and the sensitive plates be readily prepared.

Some plates were fumed with ammonia; these fogged under the pyro. solution. The proportions set down were only taken at random, and are certainly not as sensitive as might be procured under trials. The remaining emulsion was left shut up in a box in the dark room and tried on the third day after preparation; but the sensibility had, it seems, greatly diminished, though the emulsion, when rendered fluid by gently warming, appeared creamy and the bromide thoroughly suspended. Some of this was now applied to some pieces of paper by means of a glass rod, and hung up to surface dry, then dried fully on the warmed level plate, and treated as sensitised paper.

One kind of paper that evidently was largely adulterated by some earthy base dried without any brilliancy, but gave, under exposure of a negative for thirty seconds, very nicely-toned prints when developed with a weak solution of pyro., having very much the look of a neutral-toned carbon print without any glaze, and I think might be rendered useful on plain paper. Some old albumenised paper of Marion's was tried, the emulsion being poured both on the albumen side and, in other pieces, on the plain side, but the salting evidently greatly interfered, the resulting prints being dirty-looking and greyed all over.

These papers fumed with ammonia turned grey under development. They printed very slowly, even in strong sunlight, and were none of them left long enough to develop into a full print. After washing they were cleared by weak hypo. solution. It is very possible the iron developer may be employed for the glass prints, provided the usual acidification does not render the gelatine soft under development.

The slowness may depend in part on the proportions of bromide and nitrate not being correctly balanced, especially as the ordinary, not the anhydrous, bromide was used, and on the quantities being too small for the proportion of gelatine. Whether the plates would be more sensitive if used when only surface dry is a question of experiment; also, whether other bromides than the one tried may not prove more advantageous in the presence of the neutral salt resulting from the decomposition, or the omission or decrease of the quantity of aqua regia. Very probably also the development by gallic acid and acetate of lead developer may furnish better results than the plain pyro.

As there will be no chance of my being able to continue these experiments, they are placed in their crude state before the readers of the Journal, and may eventually receive correction and improvement under abler hands. So far as can be judged, the process seems quite worth more carefully-conducted experiments, and, if found advantageous, adds another handle to the photographer's wheel.

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